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FILE 'HOME' ENTERED AT 14:08:18 ON 11 OCT 2000

=> file inspec

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.15	0.15

FILE 'INSPEC' ENTERED AT 14:08:24 ON 11 OCT 2000  
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FILE LAST UPDATED: 09 OCT 2000 <20001009/UP>  
FILE COVERS 1969 TO DATE.

=> s subscriber line#

12139 SUBSCRIBER  
4830 SUBSCRIBERS  
15550 SUBSCRIBER  
(SUBSCRIBER OR SUBSCRIBERS)  
452826 LINE#  
L1 2130 SUBSCRIBER LINE#  
(SUBSCRIBER(W) LINE#)

=> s l1 and (data rate#)

1054904 DATA  
90 DATAS  
1054965 DATA  
(DATA OR DATAS)  
464260 RATE#  
8977 DATA RATE#  
(DATA(W)RATE#)  
L2 69 L1 AND (DATA RATE#)

=> l2 and measur#

L2 IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).

=> s l2 and measur#

122803 MEASUR#  
L3 0 L2 AND MEASUR#

=> s l2 and measur?

1282038 MEASUR?  
L4 7 L2 AND MEASUR?

=> d his

(FILE 'HOME' ENTERED AT 14:08:18 ON 11 OCT 2000)

FILE 'INSPEC' ENTERED AT 14:08:24 ON 11 OCT 2000

L1 2130 S SUBSCRIBER LINE#  
L2 69 S L1 AND (DATA RATE#)  
L3 0 S L2 AND MEASUR#  
L4 7 S L2 AND MEASUR?

=> d hit 1-

YOU HAVE REQUESTED DATA FROM 7 ANSWERS - CONTINUE? Y/(N):y

L4 ANSWER 1 OF 7 INSPEC COPYRIGHT 2000 IEE

AB This article presents an approach to providing very high-**data-**  
**rate** downstream Internet access by nomadic users within the  
current CDMA physical layer architecture. A means for considerably  
increasing the throughput by optimizing packet data protocols and by  
other network and coding techniques are presented and supported by simulations  
and laboratory **measurements**. The network architecture, based on  
Internet protocols adapted to the mobile environment, is described,  
followed by a discussion of economic considerations in comparison to  
cable and DSL services.  
ST high speed wireless data service; nomadic users; bandwidth efficient data  
service; CDMA/HDR; downstream Internet access; CDMA physical layer  
architecture; throughput; packet data protocols; coding techniques;  
simulations; **laboratory measurements**; network architecture;  
Internet protocols; mobile environment; economic considerations; DSL  
services; cable services; **digital subscriber line**; tariff; IP

L4 ANSWER 2 OF 7 INSPEC COPYRIGHT 2000 IEE

AB This paper presents a very high-speed digital **subscriber line** (VDSL) solution called synchronized discrete multi-tone (SDMT), which is a flexible, low-complexity time-division duplexed implementation of DMT that provides key desirable VDSL features. The **measured** performance results quantify the achievable ranges and **data rates** of a currently-available SDMT VDSL system.

CT DIGITAL **SUBSCRIBER LINES**; MODEMS; MODULATION

ST synchronized DMT modems; SDMT modems; modem performance; modem design; **very high-speed digital subscriber line**; synchronized discrete multi-tone; **measured performance results**; low-complexity time-division duplexed implementation; **data rates**; ranges; SDMT VDSL system; DMT modulation

L4 ANSWER 3 OF 7 INSPEC COPYRIGHT 2000 IEE

AB This paper presents a comparison of two different modulation schemes, 16QAM and multitone, for transmitting high-bit-rate data over category 5 twisted pair lines using asymmetric digital **subscriber line** (ADSL) technology. A channel model is obtained from **measurement** results of a 1000-foot category 5 twisted pair. The performances for 16QAM and multitone are simulated with the **measured** channel model at two **data rates** 2.05 Mbit/s (for MPEG1) and 10.24 Mbit/s (for MPEG2). For comparison, both the 16QAM and multitone schemes occupy the same frequency bands. Symbol error rates are obtained under different receiver configurations and signal-to-noise ratios. It is found that 16QAM and multitone have similar performance over category 5 twisted pairs which have a rather flat frequency response. The modulation scheme that should be adopted is hence dependent on the implementation cost and complexity.

CT DATA COMMUNICATION; DIGITAL **SUBSCRIBER LINES**; ERROR STATISTICS; FREQUENCY RESPONSE; QUADRATURE AMPLITUDE MODULATION; RECEIVERS; TWISTED PAIR CABLES

ST 16QAM; short-haul ADSL systems; multitone modulation; high-bit-rate data transmission; category 5 twisted pair; **asymmetric digital subscriber line**; performance; MPEG1; MPEG2; symbol error rates; receiver configurations; signal-to-noise ratios; frequency response; implementation cost; complexity

L4 ANSWER 4 OF 7 INSPEC COPYRIGHT 2000 IEE

AB With a hybrid fiber/twisted-pair architecture, **data rates** up to about 50 Mbit/s can be transmitted over installed twisted-pair cables in the distribution part of twisted-pair access networks. Based on a channel model for twisted-pair cables for frequencies up to 40 MHz derived from **measurements**, different transmission formats are compared. It is concluded that frequency division multiplexed VDSL (Very high bit rate Digital **Subscriber Line**) systems based on QAM (Quadrature Amplitude Modulation) or CAP (Carrierless AM/PM) are a good choice. In this paper, two scalable system proposals are presented. Both systems can transmit 12.5 Mbit/s symmetrically over a distance of about 800 m. System 1 enables as well the asymmetrical transmission of 50/2 Mbit/s over 280 m, whereas system 2 enables the symmetrical transmission of 25 Mbit/s over 300 m. Based on the required filter lengths of the equalizer and the wordlengths of the signals within the adaptive filters, the hardware complexity of the proposed VDSL transceivers is determined.

ST **very high bit rate digital subscriber line systems**; hybrid fiber/twisted-pair architecture; hardware design; performance analysis; **data rates**; installed twisted-pair cables; twisted-pair access networks; channel model; frequency division multiplexed VDSL; QAM; carrierless AM/PM; scalable system proposals; symmetrical transmission; asymmetrical transmission; filter lengths; equalizer; signal wordlengths; adaptive filters; hardware complexity; 50 Mbit/s; 40 MHz; 12.5 Mbit/s;

L4 ANSWER 5 OF 7 INSPEC COPYRIGHT 2000 IEE

AB In a hybrid fiber/twisted-pair architecture the transmission of **data rates** much higher than the 1.5 or 2 Mbit/s of the high bit-rate digital **subscriber line** (HDSL) service can be achieved by reducing the loop length of twisted pair cables in the access network. In this paper we present a channel model for twisted-pair cables for frequencies up to 40 MHz, which is derived from **measurements** and theoretical analyses. Based on the new channel model the transmission capacity for a symmetrical pulse amplitude modulation (PAM) system with adaptive echo cancellation (EC) and for a carrierless AM/PM (CAP) system based on frequency division multiplexing (FDM) is calculated, Up to a table length of 200 m the PAM system achieves

higher **data rates**, whereas for longer distances CAP systems are advantageous, Over 200 m a **data rate** of about 30 Mbit/s can be transmitted by both systems with 24 identical self-crosstalk disturbers in the 50-pair distribution cable. Whereas the reach of a 25 Mbit/s echo cancellation system can be increased to 360 m

by NEXT cancellation, the range of the FDM system can even be improved from 300 m to 610 m for the same **data rate**. Crosstalk cancellation results in a high hardware complexity but could be realized with gate arrays in 0.5 or 0.35  $\mu$ m technology.

ST transmission capacity; design; VHDSL-system; hybrid fiber/twisted-pair architecture; **data rates**; **high bit-rate digital subscriber line**; loop length; twisted pair cables; access network; channel model; symmetrical pulse amplitude modulation; adaptive echo

cancellation; carrierless AM/PM system; CAP; frequency division multiplexing; FDM; self-crosstalk disturbers; 50-pair distribution cable; echo cancellation system; NEXT cancellation; range; crosstalk cancellation; 25 Mbit/s; 1.5 to 2 Mbit/s; 0 to 610 m; 2 to 40 MHz; 30 Mbit/s

L4 ANSWER 6 OF 7 INSPEC COPYRIGHT 2000 IEE

AB The growing demand to transmit high-speed digital data in many local area networks (LANs) and digital **subscriber lines** (DSLs) has resulted in a wide variety of transmission systems that have to co-exist on twisted wire copper pairs. In this paper, we address the problem of maintaining spectrum compatibility between various services that may use different transmission technologies, by shaping in an

optimal manner, the power spectral density (PSD) of the transmit signal. A multitone modulation scheme such as discrete multitone (DMT) has the flexibility of optimizing the power spectrum over more than one

(disjoint) frequency band, and is suitable for twisted pair subscriber loops, and other transmission media, where the optimized transmit spectrum is likely to occupy more than one frequency band. DMT has been selected by the American National Standards Institute (ANSI) T1E1.4 Standards Committee

as the standard modulation scheme for asymmetric DSL (ADSL). The results presented in this paper are for the specific application of DMT to transport ADSL payloads of over 6 Mb/s from the network to the customer. We consider spectral compatibility between ADSL, the T1 repeater system, high bit-rate DSL (HDSL), and integrated services digital networks (ISDN) basic rate access (BRA) systems. The simulation results show that: 1) one can customize the transmit PSD to achieve optimum ADSL performance in a specified noise environment; 2) this optimum performance can result in as much as approximately 6 dB improvement in signal-to-noise ratio (SNR)

when compared to the nonoptimized PSD chosen by the T1E1.4 committee; 3) in achieving the above improvements, the total maximum transmit power is still consistent with the limit set by the T1E1.4 committee. Further work

is required to support the simulation results with **measured** data. The mathematical analysis is based on the use of Lagrange multipliers to solve the constrained optimization problem, and is easily extended to other asymmetric and full-duplex wireline transmission

systems

operating at much higher **data rates**. The practicality of implementing the proposed optimization routine requires further investigation.

ST optimization; discrete multitone; spectrum compatibility; transmission systems; twisted copper pairs; high-speed digital data; LAN; **digital subscriber lines**; transmission technologies; power spectral density; multitone modulation scheme; ADSL; spectral compatibility; T1 repeater system; HDSL; ISDN; noise; performance; signal-to-noise ratio; T1E1.4 committee; mathematical analysis; Lagrange multipliers

L4 ANSWER 7 OF 7 INSPEC COPYRIGHT 2000 IEE

AB In order to characterize the local network for digital transmission, this paper describes a method based upon automatic **measurements** collected from an experimental network. Some results on the electrical properties of the cables (from 1 kHz up to 1 MHz) as well as on their capacity to support simultaneous digital channels (from 144 kbit/s up to

2

Mbit/s) are given. At the end, indications on the **subscriber lines** configurations are presented and result in the percentage of subscribers that can be reached without, or with 1 or more repeaters at a given bit rate.

ST frequency 1 kHz to 1 MHz; **data rate 144 kb/s to 2 Mb/s**; organisation; modelling; subscriber network; digital transmission; **automatic measurements**; experimental network; electrical properties; cables; capacity; simultaneous digital channels; indications; **subscriber lines configurations**; repeaters; bit rate

=> d all 7

L4 ANSWER 7 OF 7 INSPEC COPYRIGHT 2000 IEE

AN 1984:2257629 INSPEC DN B84032194; C84026044

TI Characterisation, organisation and modelling of subscriber network in view

of its digitisation.

AU Brunel, F.; Deffin, P.; Moisan, G.; Schneider, C. (CNET, Lannion, France)

SO L'Onde Electrique (March-April 1984) vol.64, no.2, p.20-35. 2 refs.

CODEN: ONELAS ISSN: 0030-2430

DT Journal

TC General Review; Experimental

CY France

LA French

AB In order to characterize the local network for digital transmission, this paper describes a method based upon automatic **measurements** collected from an experimental network. Some results on the electrical properties of the cables (from 1 kHz up to 1 MHz) as well as on their capacity to support simultaneous digital channels (from 144 kbit/s up to

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Mbit/s) are given. At the end, indications on the **subscriber lines** configurations are presented and result in the percentage of subscribers that can be reached without, or with 1 or more repeaters at a given bit rate.

CC B6210 Telecommunication applications; C5600 Data communication equipment and techniques

CT DIGITAL COMMUNICATION SYSTEMS

ST frequency 1 kHz to 1 MHz; **data rate 144 kb/s to 2 Mb/s**; organisation; modelling; subscriber network; digital transmission; **automatic measurements**; experimental network; electrical properties; cables; capacity; simultaneous digital channels; indications;

ET subscriber lines configurations; repeaters; bit rate  
In

**WEST**

Generate Collection

L9: Entry 1 of 89

File: USPT

Aug 29, 2000

DOCUMENT-IDENTIFIER: US 6111861 A

TITLE: Method and system for managing high speed data communication

## BSPR:

To reiterate, in the past, the average call lasted about three minutes. However, it has been reported that the average Internet session lasts about 20 minutes. As discussed above, central offices were simply not designed and engineered to handle the increased levels of traffic caused by Internet (and other data access) users. Additional resources are required to increase the capacity of the central office to handle such traffic. Although most telephone service providers offer digital services, such as ISDN for use with ISDN compatible network termination equipment for example, for high bandwidth data communication, many Internet service providers and those accessing the Internet prefer to use less expensive high speed modems connected to lines tariffed for voice communications. Since, at this time, it is difficult for telephone service providers to determine whether a 1MB line is being used for voice (having an average use of 3CCS) or data (having an average use of 20 CCS and above), they cannot bill voice and data users at different rate. Thus, those using their telephone lines for voice communication are, in effect, subsidizing those using their telephone lines for data communication.

**WEST**

Generate Collection

L9: Entry 45 of 89

File: USPT

Mar 19, 1991

DOCUMENT-IDENTIFIER: US 5001729 A

TITLE: High speed half duplex modem with fast turnaround protocol

BSPR:

Full duplex operation (the ability to send and receive at the same time) is typically preferred. Also, as the amount of data to be transferred from one device to another is increased, higher data rates (in bits per second) are generally desired in order to reduce connection time and telephone charges, especially where long distance communications are involved. However, a typical telephone line has a limited bandwidth, approximately three kiloHertz, and this limited bandwidth, in conjunction with background noise, crosstalk, and transmission line phase and amplitude distortion, places an upper limit on the rate at which data can be successfully transferred over the telephone line.